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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,731	03/16/2004	Jimmy S. Wong	58268.00302	1038

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EXAMINER	
NGUYEN, ANH NGOC M	

ART UNIT	PAPER NUMBER
2416	

MAIL DATE	DELIVERY MODE
12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,731	WONG, JIMMY S.	
	Examiner	Art Unit	
	Anh Ngoc Nguyen	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03/16/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

Applicant's Arguments/Remarks dated 09/15/2008 with respect to claims have been fully considered but are moot in view of the new ground(s) of rejection.

Claims 1, 8, and 15 have been amended. Claims 1 - 18 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/06/2008 has been entered.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 6,754,211) in view of Roy et al (US 6,246,682) and further in view of Basu et al (US 7,292,529).

Brown discloses method and apparatus for wire speed IP multicast forwarding comprising the following features:

Regarding claim 1, Brown discloses a method of replicating multicast datagrams in a network device (see Fig. 1, switch), said method comprising: determining whether a scheduled outgoing datagram (see Fig. 1 and col. 3 lines 20 – 32, MFI corresponding to the IP multicast group to which the IP multicast data packet is to be forwarded) stored in a main memory is a multicast (MC) packet (see col. 4 lines 31 – 35, identifying the received IP multicast data packet); when the scheduled outgoing datagram type is the MC datagram (see col. 2 lines 52 – 62 and col. 4 lines 31 – 35 and col. 8 lines 29 - 34): performing a lookup of a replicate count table to determine a copy count value (see col. 7 lines 9 - 22, port queue count) and writing the copy count value to a copy count register (see col. 7 lines 14 – 16, stored in a port queue counter register); awaiting a ready signal from an egress port of the network switch (see Fig. 1, Fig. 4 and col. 6 lines 31 – 40, egress multicast forwarding logic waiting signal from forward vector); sending the outgoing datagram to the egress port from the main memory along with the copy count value (see col. 1 lines 25 – 28 lines 40 - 45, forwarding IP multicast data packet and the number of copies); changing the copy count value in the copy count register (see col. 7 lines 19 – 21, port queue count is decremented therefore changing the value); modifying a VLAN identifier of the outgoing datagram (see col. 1 lines 65 – 67 col. 2 lines 1 – 10, modification entry includes an id for a Virtual LAN) if necessary based on the copy count value (see col. 7 lines 9 – 22, counter register); and forwarding the outgoing datagram from the egress port (see col. 6 lines 14 – 21, forwarding through the egress port).

Regarding claim 5, Brown discloses wherein the sending the outgoing datagram comprises: reading a first portion of the datagram from the main memory (see Fig. 1, memory 116); sending the first portion, along with the copy count value and the pointer (see col. 1 lines

25 – 28 lines 40 - 45, forwarding IP multicast data packet and the number of copies), to the egress port; continuing to read and send subsequent portions of the datagram until a last portion is read (see Fig. 1 and col. 4 lines 45 - 63, data-out 124 from memory 116); and decrementing the copy count value in the copy count register (see col. 7 lines 19 – 21, port queue count is decremented therefore changing the value).

Regarding claim 6, Brown discloses wherein the modifying the VLAN identifier of the outgoing datagram comprises accessing a VLAN ID table (see Fig. 7, VLAN ID table 702) using the pointer as an index to obtain a new VLAN identifier (see Fig. 3B and col. 12 lines 12 – 26 lines 55 - 60, VLAN ID in a packet).

Regarding claim 7, Brown discloses wherein the new VLAN identifier (see Fig. 3B, VLAN ID in a packet) is obtained from a bit value in an entry in the VLAN ID table (see Fig. 7 VLAN ID table 702) provided by the pointer (see col. 12 lines 12 – 39, an index to a VLAN ID entry), where the bit value is equal to the copy count value (see col. 7 lines 9 – 22, counter register).

Regarding claim 8, Brown discloses a network device for handling datagrams in a network (see Fig. 1, switch), comprising: a main memory (see Fig. 1, memory 116); determining means for determining whether a scheduled outgoing datagram stored in the main memory is a multicast (MC) datagram (see col. 4 lines 31 – 35, identifying the received IP multicast data packet); performing means for performing a lookup of a replicate count table to determine a copy count value (see col. 7 lines 9 - 22, port queue count) and writing the copy count value to a copy count register (see col. 7 lines 14 – 16, stored in a port queue counter register); awaiting means for awaiting a ready signal from an egress port of the network switch

(see Fig. 1, Fig. 4 and col. 6 lines 31 – 40, egress multicast forwarding logic waiting signal from forward vector); sending means for sending the outgoing datagram to the egress port from the main memory along with the copy count value (see col. 1 lines 25 – 28 lines 40 - 45, forwarding IP multicast data packet and the number of copies); changing means for changing the copy count value in the copy count register (see col. 7 lines 19 – 21, port queue count is decremented therefore changing the value); modifying a VLAN identifier of the outgoing datagram (see col. 1 lines 65 – 67 col. 2 lines 1 – 10, modification entry includes an id for a Virtual LAN) if necessary based on the copy count value (see col. 7 lines 9 – 22, counter register); and forwarding means for forwarding the outgoing datagram from the egress port (see col. 6 lines 14 – 21, forwarding through the egress port) wherein the performing, awaiting, sending, changing, modifying and forwarding means are configured to be activated when the scheduled outgoing datagram type is the MC datagram (see abstract, IP multicast packet).

Regarding claim 12, Brown discloses wherein the sending the outgoing datagram comprises: reading a first portion of the datagram from the main memory (see Fig. 1, memory 116); sending the first portion, along with the copy count value and the pointer (see col. 1 lines 25 – 28 lines 40 - 45, forwarding IP multicast data packet and the number of copies), to the egress port; continuing to read and send subsequent portions of the datagram until a last portion is read (see Fig. 1 and col. 4 lines 45 - 63, data-out 124 from memory 116); and decrementing the copy count value in the copy count register (see col. 7 lines 19 – 21, port queue count is decremented therefore changing the value).

Regarding claim 13, Brown discloses wherein the modifying the VLAN identifier of the outgoing datagram comprises accessing a VLAN ID table (see Fig. 7 VLAN ID table 702)

using the pointer as an index to obtain a new VLAN identifier (see Fig. 3B and col. 12 lines 12 – 26 lines 55 - 60, VLAN ID in a packet).

Regarding claim 14, Brown discloses wherein the new VLAN identifier (see Fig. 3B, VLAN ID in a packet) is obtained from a bit value in an entry in the VLAN ID table (see Fig. 7 VLAN ID table 702) provided by the pointer (see col. 12 lines 12 – 39, an index to a VLAN ID entry), where the bit value is equal to the copy count value (see col. 7 lines 9 – 22, counter register).

Regarding claim 15, Brown discloses a network device for handling datagrams (see Fig. 1, switch), comprising: at least one data port interface, said at least one data port interface supporting a plurality of data ports transmitting and receiving datagrams (see Fig. 1, port 108, port 1, port 2….); in communication with said at least one data port interface; and a main memory (see Fig. 1, memory 116 coupled to ports 108, 1, 2, ….), said main memory communicating with said at least one data port interface (see Fig. 1, memory 116 coupled to ports 108, 1, 2, ….), configured to determine whether a scheduled outgoing datagram stored in the main memory is a multicast (MC) datagram (see col. 4 lines 31 – 35, identifying the received IP multicast data packet); wherein when the scheduled outgoing datagram is of a type that is the MC datagram (see col. 2 lines 52 – 62 and col. 4 lines 31 – 35 and col. 8 lines 29 - 34), configured to perform a lookup of a replicate count table to determine a copy count value (see col. 7 lines 9 - 22, port queue count), configured to write the copy count value to a copy count register (see col. 7 lines 14 – 16, stored in a port queue counter register); configured to send the outgoing datagram to the egress port from the main memory along with the copy count value (see col. 1 lines 25 – 28 lines 40 - 45, forwarding IP multicast data packet and the number

of copies), configured to change the copy count value in the copy count register (see col. 7 lines 19 – 21, port queue count is decremented therefore changing the value); and wherein the at least one data port interface is configured to modify a VLAN identifier of the outgoing datagram (see col. 1 lines 65 – 67 col. 2 lines 1 – 10, modification entry includes an id for a Virtual LAN) if necessary based on the copy count value (see col. 7 lines 9 – 22, counter register) and configured to forward the outgoing datagram from the egress port (see col. 6 lines 14 – 21, forwarding through the egress port).

Brown discloses the claimed limitations as stated above. Brown does not specifically disclose regarding claim 1, determining by a memory management unit; regarding claim 3, further comprising steps of waiting until the copy count value in the copy count register is zero and releasing a pointer to a memory location of the outgoing datagram in the main memory; regarding claim 4, wherein the step of performing the lookup of the replicate count table comprises determining a pointer based on the group number and using that pointer as an index for the replicate count table to perform the lookup; regarding claim 8, determining by a memory management unit; regarding claim 10, further comprising steps of waiting until the copy count value in the copy count register is zero and releasing a pointer to a memory location of the outgoing datagram in the main memory; regarding claim 11, wherein the step of performing the lookup of the replicate count table comprises determining a pointer based on the group number and using that pointer as an index for the replicate count table to perform the lookup; regarding claim 15, a memory management unit, controlling by the memory management unit; regarding claim 17, wherein the memory management unit is configured to wait until the copy count value in the copy count register is zero before releasing a pointer to a memory location of the

outgoing datagram in the main memory; regarding claim 18, wherein the memory management unit is configured to determine a pointer based on a group number and configured to implement that pointer as an index for the replicate count table to perform the lookup.

Roy discloses method and apparatus for managing multiple ATM cell queues comprising the following features:

Regarding claim 1, Roy discloses determining by a memory management unit (see abstract, management memory).

Regarding claim 3, Roy discloses further comprising waiting until the copy count value in the copy count register is zero (see abstract, reduced to zero) and releasing a pointer to a memory location of the outgoing datagram in the main memory (see abstract and col. 3 lines 20 - 33, added to the free list).

Regarding claim 4, Roy discloses wherein the performing the lookup of the replicate count table comprises determining a pointer based on the group number (see col. 2 lines 58 – 67, a count of the number cells in the queue) and using that pointer as an index for the replicate count table to perform the lookup (see col. 3 lines 1 – 12 and col. 4 lines 55 – 67, pointer is provided for each data element).

Regarding claim 8, Roy discloses determining by a memory management unit (see abstract, management memory).

Regarding claim 10, Roy discloses further comprising waiting until the copy count value in the copy count register is zero (see abstract, reduced to zero) and releasing a pointer to a memory location of the outgoing datagram in the main memory (see abstract and col. 3 lines 20 - 33, added to the free list).

Regarding claim 11, Roy discloses wherein the performing the lookup of the replicate count table comprises determining a pointer based on the group number (see col. 2 lines 58 – 67, a count of the number cells in the queue) and using that pointer as an index for the replicate count table to perform the lookup (see col. 3 lines 1 – 12 and col. 4 lines 55 – 67, pointer is provided for each data element).

Regarding claim 15, Roy discloses a memory management unit (see abstract, management memory), controlling by the memory management unit (col. 3 lines 13 – 35 and col. 4 lines 39 – 43, a management RAM for managing the shared RAM).

Regarding claim 17, Roy discloses wherein the memory management unit is configured to wait until the copy count value in the copy count register is zero (see abstract, reduced to zero) before releasing a pointer to a memory location of the outgoing datagram in the main memory (see abstract and col. 3 lines 20 - 33, added to the free list).

Regarding claim 18, Roy discloses wherein the memory management unit is configured to determine a pointer based on a group number (see col. 2 lines 58 – 67, a count of the number cells in the queue) and configured to implement that pointer as an index for the replicate count table to perform the lookup (see col. 3 lines 1 – 12 and col. 4 lines 55 – 67, pointer is provided for each data element).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Brown, and use a management memory, as taught by Roy, thus providing for efficient use of memory in multicasting and which is easily implemented, as discussed by Roy (see col. 2 lines 6 - 36).

Brown and Roy disclose the claimed limitations as stated above. Brown and Roy do not specifically disclose the following features: regarding claim 1, a copy count value that represents a number of copies that have been generated to duplicate a particular packet; regarding claim 2, wherein the method performed by the memory management unit is suspended based on a presence of a higher-priority outgoing datagram; regarding claim 8, a copy count value that represents a number of copies that have been generated to duplicate a particular packet; regarding claim 9, wherein the method performed by the memory management unit is suspended based on a presence of a higher-priority outgoing datagram; regarding claim 15, a copy count value that represents a number of copies that have been generated to duplicate a particular packet; regarding claim 16, wherein the memory management unit is configured to suspend the replication of the outgoing datagram based on a presence of a higher-priority outgoing datagram.

Basu discloses memory load balancing for single stream multicast comprising the following features:

Regarding claim 1, Basu discloses a copy count value that represents a number of copies that have been generated to duplicate a particular packet (see col. 2 lines 1 – 4 lines 14 – 27, col. 5 lines 10 – 20, and col. 6 lines 6 - 20).

Regarding claim 2, Basu discloses wherein the method performed by the memory management unit is suspended based on a presence of a higher-priority outgoing datagram (see col. 4 lines 63 – 67 and col. 5 lines 1- 10).

Regarding claim 8, Basu discloses a copy count value that represents a number of copies that have been generated to duplicate a particular packet (see col. 2 lines 1 – 4 lines 14 – 27, col. 5 lines 10 – 20, and col. 6 lines 6 - 20).

Regarding claim 9, Basu discloses wherein the method performed by the memory management unit is suspended based on a presence of a higher-priority outgoing datagram (see col. 4 lines 63 – 67 and col. 5 lines 1- 10).

Regarding claim 15, Basu discloses a copy count value that represents a number of copies that have been generated to duplicate a particular packet (see col. 2 lines 1 – 4 lines 14 – 27, col. 5 lines 10 – 20, and col. 6 lines 6 - 20).

Regarding claim 16, Basu discloses wherein the memory management unit is configured to suspend the replication of the outgoing datagram based on a presence of a higher-priority outgoing datagram (see col. 4 lines 63 – 67 and col. 5 lines 1- 10).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the invention of Brown and Roy, and have the above features, as taught by Basu, thus implementing a more efficient multicasting technique within routers, as discussed by Basu (see col. 1 lines 45 - 55).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ngoc Nguyen whose telephone number is (571) 270-5139. The examiner can normally be reached on M - F, from 7AM to 3PM (alternate first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 5712723182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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